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INDEX II TO THE LITERATURE OF  
AMERICAN ECONOMIC ENTOMOLOGY



INDEX II  
TO THE  
LITERATURE  
OF  
AMERICAN ECONOMIC  
ENTOMOLOGY

January 1, 1915 to December 31, 1919

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*Compiled by*  
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*Edited by*  
E. PORTER FELT



AMERICAN ASSOCIATION OF ECONOMIC ENTOMOLOGISTS  
MELROSE HIGHLANDS, MASS.  
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## INTRODUCTORY

The preparation of this Index was under the general charge of the special committee of the American Association of Economic Entomologists which started the movement resulting in the Banks' Index. This Index was possible only through the cooperation of Dr. L. O. Howard, Chief of the Bureau of Entomology, United States Department of Agriculture, who kindly detailed Miss Mabel Colcord to have charge of the preparation of the manuscript. To her, and her assistants, as well as to Dr. Howard, the economic entomologists of the world owe a debt of gratitude for the compilation of an immensely serviceable work.

The Index, when turned over to the Editorial Board of the Journal of Economic Entomology, comprised some 48,000 references besides numerous scientific names and other titles. It was necessary to reduce the size of the volume and if possible not seriously impair its value. The immense number of references made it impracticable to consult every citation and there are doubtless many errors of omission, both passive and active, for which the editor will probably be held responsible. There are a number of authors with the same surname. Initials were not included in the manuscript and the editor has not attempted to supply them. Their omission should not result in material confusion.

The following rules were adopted for guidance in this difficult undertaking, there being exceptions, mostly intentional.

The scope was limited to temperate and subtropical America, thus the extreme north and the Hawaiian Islands were excluded.

Only the better established or well known common names have been retained.

Anonymous articles in the agricultural press have been excluded, and all in farm papers in the case of a species or topic with numerous citations, such as *Aspidiotus perniciosus* and "Spraying." The omission of such citations is indicated by an asterik (\*) following the name and in some cases citations of official press bulletins or circulars, the more ephemeral literature, have been omitted because data of value in these media are very likely to appear in bulletins or reports.

The nature of general works is so well indicated by the title that in order to avoid much duplication only a few of the more important subdivisions have been indexed in the following books dealing mostly with rather well known insects:

Essig, E. O., *Injurious and Beneficial Insects*, 2d Ed., 1915.

Herrick, G. W., *Insects of Economic Importance*, 1915.

O'Kane, W. C., *Injurious Insects*, 1916.

Osborn, Herbert, *Agricultural Entomology*, 1916.

Pierce, W. D., *Dangerous Insects Likely to be Introduced in the United States*, 1917.

Crosby, C. R., and Leonard, M. D., *Manual of Vegetable-Garden Insects*, 1918.

Washburn, F. L., *Injurious Insects and Useful Birds*, 1918.

Lochhead, Wm., *Class Book of Economic Entomology*, 1919.

There are many excellent contributions dealing with a number of species of the same genus and where possible there has been condensation and the abbreviation "spp." following a name may refer to a group of named species as well as to unknown forms.

E. P. FELT,  
W. E. BRITTON,  
W. E. HINDS,  
W. C. O'KANE,  
A. F. BURGESS,  
Committee.

# INDEX TO THE LITERATURE OF AMERICAN ECONOMIC ENTOMOLOGY

JANUARY 1, 1915 TO DECEMBER 31, 1919

By MABEL COLCORD

The following Index to the literature of American Economic Entomology for the five year period from January 1, 1915 to December 31, 1919 is a continuation of the Banks' Index, 1905 to 1914 inclusive, as that in turn was a modified extension of the Bibliography of American Economic Entomology published by the United States Department of Agriculture, parts I-V by Samuel Henshaw and parts VI-VIII by Nathan Banks.

The plan of the Banks' Index has been closely followed. The insects and other headings are arranged alphabetically; the references being by authors alphabetically, those by each author chronologically. Practically all anonymous articles have been omitted.

The references may be easily understood after reading the following explanation and referring, when necessary to the list of abbreviations.

"B." means bulletin, "C", circular, "R", report, "P. B.", press bulletin. Publications of experiment stations are referred to simply by State and number of bulletin, circular or report, as "Fla. B. 42" means Bulletin 42 of the Florida Agricultural Experiment Station. In New York, the Cornell bulletins are referred to as "N. Y. C. B."; the Geneva Station bulletins as "N. Y. Geneva B." The bulletins of the United States Department of Agriculture are referred to as "U. S. D. A. B.", the Yearbook articles as "U. S. Y. B."; the Farmers' Bulletins as "U. S. F. B."

"Pr." or "Proc." is used for Proceedings, "Jr." or "J." for Journal. The words "State" and "Annual" are usually omitted in the references, although in a few cases "St." (State) is retained because of possible confusion. The first figure after the "B." or "R." indicates the number of the volume (if a periodical) or of a bulletin or report and the next figure the page; if three or more numbers appear in the same reference the first is the volume, the second the number in the volume and the third the page in the number and a semicolon follows the volume number in all such cases. The year is usually added in all references as it is oftentimes a great help.

Questions of synonymy and nomenclature have been very kindly determined by the following members of the staff of the Bureau of Entomology:

Coleoptera, Mr. E. A. Schwarz and Mr. H. S. Barber.

Hymenoptera, Mr. R. A. Cushman, Mr. A. B. Gahan and Mr. S. A. Rohwer.

Diptera, Dr. J. M. Aldrich.

Orthoptera, Mr. A. N. Caudell.

Neuroptera, Mr. A. N. Caudell.

Odonata, Miss Bertha Currie.

Lepidoptera, Dr. H. G. Dyar and Mr. August Busck.

Hemiptera, Dr. A. C. Baker and Mr. E. H. Gibson.

Coccidae, Mr. E. R. Sasser and Mr. Harold Morrison.

Termitidae, Dr. T. E. Snyder.

Acarina, Dr. H. E. Ewing.

Parasites of animals, Mr. J. L. Webb.

Diseases of Bees, Dr. G. F. White.

Fungous diseases of insects, Dr. A. T. Speare.

Many helpful suggestions have come also from Mr. R. P. Currie, Mr. C. H. Popenoe, Mr. Jacob Kotinsky and Mr. Nathan Banks.

The preparation of the Index has been greatly facilitated also by the untiring efforts of three clerks of the Bureau, Miss M. G. Champney, Miss Florence Gildersleeve and Mrs. Wyatt L. Ashcraft. Miss Virginia Revere and Mr. G. E. Moore gave great assistance in copying the manuscript.

## LIST OF ABBREVIATIONS

The list of abbreviations given below is supplementary to the preceding explanations:

Adv. = Advancement	Elev. = Elevator
Advoc. = Advocate	Eng. = Engineering
Agr. = Agriculture, Agriculturist, Agricultural	Ent. = Entomologist, Entomology
Am. or Amer. = American	Exch. = Exchange
Ann. = Annals, Annual	Exp. = Experimental
App. = Appendix	Extern. = Extermination
Archiv. = Archives	Farm. = Farmer
Assoc. = Association	Fed. = Federal
B. = Bulletin	Fert. = Fertilizer
B. C. = British Columbia	Flor. = Florist
Bank. = Banker	For. = Forestry
Bd. = Board	Fr. = Fruit
Bien. = Biennial	Fumig. = Fumigation
Biol. = Biological	Fung. = Fungicide
Bost. = Boston	Gard. = Gardeners, Gardening
Br. = Branch	Gaz. = Gazette
Bur. = Bureau	Gen. = General
Bul. = Bulletin	Gentl. = Gentleman
C. = Circular	Geog. = Geographic
C. when after N. Y. = Cornell	Geol. = Geology
C. Gentl. = Country Gentleman	Gr. = Grain
Can. = Canada	Grow. = Grower
Clem. = Clemson	Homest. = Homestead
Col. = Colmans	Hort. = Horticulture, Horticulturist
Coll. = College	Hosp. = Hospital
Comm. = Commission	Hyg. = Hygiene, Hygienic
Comp. = Comparative	Illus. = Illustrated
Confer. = Conference	Impl. = Implement
Cong. = Congress.	Indus. = Industrialist
Conserv. = Conservation	Intec. = Infectious
Contr. = Contribution	Infor. = Information
Conv. = Convention.	Inj. = Injurious
Coop. = Cooperative	Ins. = Insect
Cranb. = Cranberry	Insect. = Insecticide
Cult. = Cultivator	Insp. = Inspection
Cut. = Cutaneous	Internat. = International
D. A. = Department Agriculture	Interst. = Interstate
Dairym. = Dairyman	J., Jr. or Jour. = Journal
Dept. = Department	L. I. = Long Island
Dermat. = Dermatology	Lab. = Laboratory
Destr. = Destructive	Lumberm. = Lumberman
Dis. = Diseases	Mag. = Magazine
Dom. = Dominion	Man. = Manual
Ec. = Economic	Med. = Medicine, Medical
Ecol. = Ecology	Meet. = Meeting
Educ. = Education	Mem. = Memoir
	Met. = Metallurgical

# INDEX OF LITERATURE, 1915-1919

Mil. = Military	Sci. = Science
Mill. = Miller	Sec. = Secretary
Mod. = Modern	Serv. = Service
Month. = Monthly	Sess. = Session
Mos. = Mosquito	Soc. = Society
Mus. = Museum	So. = South
N. Eng. = New England	South. = Southern
Nat. = National, Naturalist	Sp. = Special
Northw. = Northwestern	St. = State
Not. = Notices	St. N. = Saint Nicholas
Nurs. = Nursery	Sta. = Station
Off. = Office	Statis. = Statistical
Ont. = Ontario	Stockm. = Stockman
Or. = Orange	Succ. = Successful
Orch. = Orchard	Sup. = Supplement
Ott. = Ottawa	Suppr. = Suppression
P. B. = Press Bulletin	Supt. = Superintendent
Pac. = Pacific	Surg. = Surgical
Path. = Pathological	Surv. = Survey
Pl. = Plant, Planter	S. W. = Southwestern
Poly. = Polytechnic	Syn. = Synopsis
Pom. = Pomological	Tech. = Technical
Pop. = Popular	Tr. or Trans. = Transactions
Poult. = Poultry	Trop. = Tropical
Prai. = Prairie	Univ. = University
Prevent. = Preventive	U. S. B. = Bulletin U. S. Bureau of Entomology
Proclam. = Proclamation	U. S. D. A. B. = Bulletin U. S. Dept. Agriculture
Prod. = Producer	U. S. F. B. = U. S. Dept. Agr. Farmers' Bulletin
Prog. = Progressive	U. S. Y. B. = Yearbook U. S. Dept. Agriculture
Protec. = Protection	Veg. = Vegetation
Pub. = Public, Publication	Vet. = Veterinary
Quar. = Quarterly	West. = Western
R. = Report	Wkly. = Weekly
Rec. = Record	Zool. = Zoology
Res. = Research	
Rev. = Review	
Roy. = Royal	
Rur. = Rural	
Ry. = Railway	



# AMERICAN ECONOMIC ENTOMOLOGY

## INDEX OF LITERATURE, 1915-1919

BY MABEL COLCORD

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- Aleyrodes mori**, *see* **Tetraleurodes mori**
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- Bracon mellitor**, *see* *Microbracon mellitor*
- Bracon nigropictus**, *see* *Macrodyctium nigropictus*
- Bracon pectinator**  
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**Bristly rose-worm**, *see* *Cladius pectinicornis*

**Broad-bean weevil**, *see* *Bruchus rufimanus*

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Watson, J. Ec. Ent. 9, 527, 1916.

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Somes, Mo. Fruit B. 24, 9, 1914.

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Clemens, N. Y. C. B. 383, 297, 1916.

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**Bronze birch borer**, *see* *Agrilus anxius*

**Bronze cutworm**, *see* *Nephelodes emmendon*, *Nephelodes minians*, *Nephelodes violans*

**Brown apricot scale**, *see* *Lecanium corni*

**Brown salt marsh mosquito**, *see* *Aedes cantator*

**Brown spider beetle**, *see* *Ptinus brunneus*

**Brown-tail moth**, *see* *Euproctis chrysorrhoea*

**Brown tick**, *see* *Rhipicephalus appendiculatus*

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- Cabbage root maggot**, *see* *Phorbia brassicae*
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**Clover mite**, *see* *Bryobia praetiosa*  
**Clover root-borer**, *see* *Hylastinus obscurus*

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- Clover seed chalcis, see** *Bruchophagus funebris*
- Clover seed midge, see** *Dasyneura leguminicola*
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- Corn stalk-borer**, *see* *Diatraea zeacolella*
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**Cotton square daubers, see Lygus elisus and Lygus pratensis**

**Cotton stainer, see Dysdercus suturellus**

**Cottonwood borer, see Plectrodera scalator**

**Cottonwood leaf beetle, see Melasoma scripta**

**Cotton worm, see Alabama argillacea**

**Cottony cushion scale, see Icerya purchasi**

**Cottony scale, see Pulvinaria vitis**

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- Currant aphid, see** *Myzus ribis*
- Currant borer, see** *Aegeria tipuliformis*
- Currant bud mite, see** *Eriophyes ribis*
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Busck, Proc. Ent. Soc. Wash. 17, 84, 1919.

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Mosher, J. Ec. Ent. 12, 262, 1919.

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Stearns, J. Ec. Ent. 12, 348, 1919.

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Burgess & Collins, U. S. D. A. B. 417, 12, 1917.

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Riley & Johannsen, Med. Ent. 312, 1915.

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Wilson, Fla. St. Pl. Bd. Quar. B. 2, 23, 1917.

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Berger, Fla. Bug. 1, 25, 1917.

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Osborn, Me. B. 238, 104, 1915.
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Blackmore, Proc. Ent. Soc. B. C. 6, 120, 1915.
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Johnson, Ent. News 27, 155, 1916.
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Girault, Brooklyn Ent. Soc. B. 12, 14, 1917.
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Britton, Conn. R. 16, 143, 1917.  
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McAtee, Brooklyn Ent. Soc. B. 14, 142, 1919.
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Gibson & Treherne, Can. Dept. Agr. Ent. B. 12, 53, 1916.
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Smyth, Rev. Agr. Puerto Rico 3, 6, 28, 1919.
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Busck, Proc. Ent. Soc. Wash. 17, 81, 1915.
- Eucordylidexia ategulata**  
Townsend, Insecutor Ins. Mens. 3, 41, 1915.
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Busck, J. Agr. Res. 9, 359, 1917.
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- Eucrada robusta**  
Van Dyke, Brooklyn Ent. Soc. B. 13, 6, 1918.
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Cotton, J. Dept. Agr. Porto Rico 2, 277, 1918.  
Cotton, Rev. Agr. Puerto Rico 1, 151, 1918.  
Jones, U. S. D. A. B. 192, 7, 1915.  
Watson, Fla. B. 134, 53, 1917.  
Watson, Fla. B. 151, 131, 1919.
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Barton, Ky. For. Bien. R. 2, 56, 1915.  
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Girault, Ent. News 27, 348, 1916.
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Fenton, Can. Ent. 49, 317, 1917.
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McConnell, J. Ec. Ent. 8, 551, 1915.
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Quaintance & Baker, Ann. Ent. Soc. Amer. 8, 369, 1915.
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Becker, J. Ec. Ent. 11, 431, 1918.  
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Wilson, Ent. News 30, 3, 1919.
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Caesar, Ont. Ent. Soc. R. 47, 110, 1917.
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Hartzell, J. Ec. Ent. 12, 233, 1919.
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Haseman, J. Agr. Res. 6, 295, 1916.
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Popenoe, U. S. D. A. B. 542, 6, 1917.
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Wellhouse, Kans. Univ. Dept. Ent. B. 11, 303, 1917.  
Wenzel, Ent. News 26, 189, 1915.
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Davidson, Can. Ent. 47, 134, 1915.  
Davidson, J. Ec. Ent. 9, 457, 1916.  
Gibson, Can. Ent. 49, 190, 1917.  
Hewitt, Can. Ent. R. f. 1917, 11.  
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Nicolay, N. J. Dept. Agr. B. 17, 144, 1918.  
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Sasscer, J. Ec. Ent. 12, 135, 1919.  
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Riley & Johannsen, Med. Ent. 306, 1915.
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Flint, J. Ec. Ent. 11, 415, 1918.  
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- Eunotus lividus**  
Simanton, U. S. D. A. B. 351, 66, 1916.
- Euonymus scale**, *see* **Chionaspis euonymi**
- Eupelminus meteori**  
Vickery, J. Ec. Ent. 8, 391, 1915.
- Eupelminus saltator**  
McConnell, J. Ec. Ent. 11, 168, 1918.
- Eupelmus allynii**  
McConnell, J. Ec. Ent. 11, 170, 1918.  
Packard, J. Agr. Res. 6, 367, 1916.  
Webster, U. S. F. B. 640, 15, 1915.
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Paddock, Texas B. 158, 26, 1913.  
Paddock, Texas B. 231, 33, 1919.
- Eupelmus cleri**, *see* **Cerambycobius cleri**
- Eupelmus coccidis**  
Horton, U. S. D. A. B. 647, 36, 1918.
- Eupelmus meteori**, *see* **Eupelminus meteori**
- Eupelmus sp.**  
Garman, Md. B. 223, 117, 1918.
- Eupelops lenticolus**  
Ewing, Ent. News 29, 82, 1918.
- Eupeodes braggii**  
Jones, Ann. Ent. Soc. Amer. 10, 221, 1917.
- Eupeodes volucris**  
Davidson, J. Ec. Ent. 9, 455, 457, 1916.
- Eupeodes weldoni**  
Jones, Ann. Ent. Soc. Amer. 10, 221, 1917.
- Euphoria herbacea**  
Knaus, Brooklyn Ent. Soc. B. 11, 84, 1916.
- Euphoria inda**  
Cooley, Mont. B. 109, 154, 1916.  
Cooley, Mont. B. 112, 60, 1916.  
Morris, Ont. Ent. Soc. R. 47, 20, 1917.  
Riley, Minn. Univ. Farm. Pr. News 10, 18, 1919.
- Euphoria sepulchralis**  
Jones, U. S. D. A. B. 703, 4, 1918.  
Popenoe, U. S. D. A. B. 542, 7, 1917.
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Davis, J. Ec. Ent. 9, 264, 1916.
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Aldrich, Ann. Ent. Soc. Amer. 8, 83, 1915.  
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Gibson, Can. Dept. Agr. Ent. B. 9, 14, 1915.  
Howard & Chittenden, U. S. F. B. 705, 6, 1916.  
Lovett, Oreg. Bien. Crop Pest R. 2, 145, 1915.  
Reinhard, Ent. News 30, 283, 1919.  
Sherman, J. Ec. Ent. 8, 299, 1915.  
Tucker, Ent. News 28, 395, 1917.
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Townsend, Ent. News 27, 217, 1916.  
Watson, J. Ec. Ent. 9, 528, 1916.
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Essig, Cal. B. 283, 60, 1917.
- Euplectrus comstocki**, *parasite*  
Gahan, Proc. U. S. Nat. Mus. 53, 215, 1917.

**Euplectrus platyhypenae**

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Vickery, J. Ec. Ent. 8, 391, 1915.

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Banks, J. Ent. & Zool. Pomona 8, 14, 1916.

**Eupogonius fraxini**

Knoll, Ent. News 29, 132, 1918.

**Eupogonius subarmatus**

Morris, Ont. Ent. Soc. R. 46, 21, 1916.

Morris, Ont. Ent. Soc. R. 48, 26, 1918.

Morris, Ont. Ent. Soc. R. 49, 19, 1919.

**Eupristocerus sp.**

Burke, U. S. D. A. B. 437, 3, 1917.

**Euproctis chrysorrhoea\***

Atwood, N. Y. St. For. Assoc. B. 2, 3, 1915.

Bailey, Vt. Com. Agr. R. 7, 19, 1915.

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Marlatt, U. S. Fed. Hort. Bd. S. R. A. 65, 109, 1919.

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Watson, Fla. B. 134, 107, 1917.

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Cotton, Porto Rico Dept. Agr. Jour. 1,  
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Fernald, Mass. Dept. Agr. R. 1, 91,  
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Davis, Market Gr. Jour. 19, 190, 1916.

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Ellis, Ent. News 26, 291, 1915.

***Halticus uhleri***

Sanborn, Okla. Ext. C. 41, 23, 1916.

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McAtee, Brooklyn Ent. Soc. B. 14, 8,  
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Riley & Johannsen, Med. Ent. 284,  
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Knab, Proc. Ent. Soc. Wash. 17, 120,  
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Gibson, Can. Dept. Agr. Ent. B. 9, 16,  
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Gibson, Can. Dept. Agr. Ent. B. 10, 11,  
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- Harpiphorus ignota**, *see* **Empria ignota**
- Harpiphorus maculatus**, *see* **Empria maculata**
- Harpiteryx** sp.  
Britton, Conn. B. 211, 243, 1919.
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Chapman & Glaser, J. Ec. Ent. 8, 141, 1915.
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Britton, Conn. B. 203, 361, 1917.  
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Middleton, Proc. Ent. Soc. Wash. 19, 179, 1917.  
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- Heliophila multilinea**, *see* **Cirphis multilinea**
- Heliophila subpunctata** *see* **Cirphis latiuscula**
- Heliophila unipuncta**, *see* **Cirphis unipuncta**
- Heliothis armiger**, *see* **Chloridea obsoleta**
- Heliothis assulta**  
Briggs, Guam R. 1918, 42, 1919.
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Foster & Jones, U. S. D. A. B. 173, 52, 1915.

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Stuckey, Southern Cult. 74, 20, 23, 1918.

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***Helochara communis***

Osborn, Me. B. 238, 103, 1915.

***Helops cisteloides***

Somes, Mo. Fruit B. 24, 17, 1914.

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McGregor & McDonough, U. S. D. A. B. 416, 47, 1917.

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Washburn, Minn. Ent. R. 17, 187, 1918.

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Newman, Cal. Cit. 4, 315, 1919.

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Childs, Oreg. B. 148, 27, 1918.

Clausen, Cal. B. 258, 41, 1915.

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Timberlake, Proc. U. S. Nat. Mus. 56, 181, 1919.

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Simanton, U. S. D. A. B. 351, 63, 1916.

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- Hen louse, see Menopon pallidum**
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Parker, U. S. D. A. B. 235, 2, 1915.
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Keith, Brooklyn Ent. Soc. B. 11, 21, 1916.
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**Heterothrips haemorrhoidalis**

Watson, Fla. R. 1917, 64R.

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 Cook, Cal. Hort. B. 4, 437, 1915.  
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 Urbahns, Cal. Hort. B. 6, 250, 1917.  
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 McCollough, J. Ec. Ent. 12, 190, 1919.  
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 Urbahns, Cal. Hort. B. 6, 250, 1917.  
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Cooley, Mont. B. 109, 154, 1916.

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Gillette, Colo. R. 28, 15, 1915.

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Chittenden, U. S. F. B. 668, 1915.

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Reed, Ga. Bd. Ent. B. 41, 23, 1915.

Sanborn, Okla. Ext. C. 41, 52, 1916.

Smith, Va. Truck B. 23, 502, 1917.

Watson, Fla. B. 134, 102, 1917.

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Hayes, J. Ec. Ent. 12, 109, 1919.

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Merrill, Kans. Indust. 42, 28, 3, 1916.

Sproat, Purdue Agr. 11, 6, 26, 1917.

Talbert, Mo. Ext. C. 15, 14, 1917.

Watson, Fla. B. 151, 170, 1919.

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Brooks, Internat. Cong. Vit. R. 1915, 243

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Braun, Ent. News 26, 160, 1915.

**Menetypus variegatus**

Pierce, U. S. D. A. Sec. R. 102, 11, 1915.

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Baker, Can. Ent. 47, 240, 1915.

Bishopp & Wood, U. S. F. B. 801, 14, 1917.

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Herrick, N. Y. C. B. 359, 242, 1915.

Lamson & Manter, Conn. Storrs B. 86, 174, 1916.

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Baker, Conn. Ent. 47, 239, 1915.

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Herrick, N. Y. C. B. 359; 235, 240, 1915.

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Mote, Ohio B. 320, 139, 1917.

**Menopon titan**

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**Meracantha contracta**

Hyslop, Psyche 22, 44, 1915.

**Meraporus calandreae**

Doane, J. Ec. Ent. 12, 312, 1919.

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Lamson, J. Ec. Ent. 10, 71, 1917.

Ormsbee, New Eng. Farm. 76, 15, 8, 1918.

**Mercuric chlorid**

Scott, Abbott & Dudley, U. S. D. A. B. 707, 3, 1918.

**Merisus destructor**

- Fyles, Ont. Ent. Soc. R. 46, 56, 1916.  
Packard, J. Agr. Res. 6, 367, 1916.  
Webster, U. S. F. B. 640, 16, 1915.

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**Merium proteus**

- Morris, Ont. Ent. Soc. R. 48, 24, 1918.

**Mermis albicans**

- Watson, Fla. B. 134, 71, 1917.  
Watson, Fla. B. 151, 149, 1919.

**Mermis sp.**

- Britton & Lowry, Conn. B. 190, 20, 1916.  
Cosens, Ont. Ent. Soc. R. 46, 16, 1916.

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- Branigan, Cal. Hort. B. 4, 574, 1915.  
Davidson, J. Ec. Ent. 9, 457, 1916.  
Headlee, N. J. R. 1914, 354.  
Sasscer, J. Ec. Ent. 12, 135, 1919.  
Weiss, Psyche 22, 106, 1915.  
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**Meromyza nigriventris**

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**Meroplus stercorarius**

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**Mesembrinella aeneiventris**

- Riley & Johannsen, Med. Ent. 314, 1915.

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- Howard & Chittenden, U. S. F. B. 705, 5, 1916.

- Webster, Iowa B. 155, 388, 1915.

**Mesochorus dilutus**

- DuPorte, Quebec Soc. Protec. Pl. R. 7, 77, 1915.

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**Mesogramma marginatus**, *see* **Toxomerus marginatus**

**Mesogramma politum**, *see* **Toxomerus politum**

**Mesograpta geminata**, *see* **Toxomerus geminata**

**Mesograpta marginata**, *see* **Toxomerus marginata**

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- Mimetes setulosus**  
 Yothers, Wash. B. 124, 18, 1916.
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 Felt, N. Y. R. 29; 48, 64, 1915.  
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Drake, Brooklyn, Ent. Soc. B. 12, 51, 1917.

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Brooks, U. S. F. B. 763, 14, 1916.

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Gill, U. S. F. B. 843, 32, 1917.

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Baker, J. Ec. Ent. 10, 424, 1917.

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Worsham, Ga. Bd. Ent. B. 48, 26, 1917.

**Monellia sp.**

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Riley &amp; Johannsen, Med. Ent. 269, 1915.

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Hyslop, U. S. D. A. B. 156, 21, 1915.

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Dozier, J. Ec. Ent. 10, 541, 1917.

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Watson, Fla. B. 134, 77, 1917.

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Anderson, S. C. Ext. B. 12, 1915.

Dozier, J. Ec. Ent. 10, 541, 1917.

Hyslop, U. S. D. A. B. 156; 3, 20, 1915.

Pierce, U. S. F. B. 890, 22, 1917.

Watson, Fla. B. 134, 76, 1917.

Watson, Fla. B. 151, 154, 1919.

**Monoctonus secundus**

Viereck, Cal. Hort. B. 4, 285, 1915.

**Monodontomerus aereus**

Britton, Conn. R. 15, 113, 1916.

Burgess, U. S. D. A. B. 204, 11, 1915.

Muesebeck, J. Agr. Res. 14, 192, 1918.

Summers, Me. Dept. Agr. R. 14, 126, 1916.

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Britton &amp; Zappe, Conn. B. 203, 263, 1917.

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Blackman, Psyche 26, 90, 1919.

Clemens, N. Y. C. B. 383, 297, 1916.

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Hewitt, Can. Ent. R. f. 1916, 36, 1917.

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Blackman, Psyche 26, 90, 1919.

Britton, Conn. B. 203, 360, 1917.

Mattoon, U. S. D. A. B. 244, 26, 1915.

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Colon, Porto Rico R. 1917-18, 30, 1919.

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Marlatt, U. S. F. B. 740, 3, 1916.

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Wheeler, Tr. Amer. Soc. Trop. Med. 9, 96, 1914.

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Marlatt, U. S. F. B. 740, 3, 1916.

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Felt, N. Y. St. Mus. B. 194, 58, 1917.

Flint, J. Ec. Ent. 11, 415, 1918.

Haseman, Rocky Mt. Husband. 43, 52, 7, 1918.

Marlatt, U. S. F. B. 740, 8, 1916.

Smith Ent. News 29 20, 1918.

Wood, U. S. D. A. B. 553, 11, 1917.

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Felt, N. Y. St. Mus. B. 194, 57, 1917.

Glitzke, So. Dak. Farm. 12, 52, 12, 1915.

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Reese, Econ. Zool. 103, 1919.

Williams, Okla. Farm-Stock. 31, 542, 1918.

Zappe, Conn. B. 203, 314, 1917.

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Marlatt, U. S. F. B. 740, 3, 1916.

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Bole, Am. Fr. Gr. 39, 12, 22, 1919.

Britton, Conn. B. 211, 329, 1919.

Caesar, Ont. Ent. Soc. R. 45, 45, 1915.

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- Onion thrips**, *see* *Thrips tabaci*
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Earle & Rogers, San Pedro Citrus Path.  
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- Pachnaeus opalus**  
Popenoe, U. S. D. A. B. 542, 7, 1917.  
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- Pachyneuron allograptae**  
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- Pachyneuron aphidivorum**  
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Flint, J. Ec. Ent. 11, 416, 1918.
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- Davis, J. Ec. Ent. 9, 264, 1916.

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- Davis, J. Ec. Ent. 9, 262, 1916.  
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**Phyllophaga hirtiventris**

- Forbes, Ill. B. 186, 235, 1916.  
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**Phyllophaga horni**

- Forbes, Ill. B. 186, 234, 1916.  
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- Davis, J. Ec. Ent. 9, 262, 1916.  
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- Davis, J. Ec. Ent. 9, 262, 1916.  
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- Hayes, J. Ec. Ent. 12, 109, 1919.  
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- Forbes, Ill. B. 186, 234, 1916.  
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- Smyth, Porto Rico Bd. Com. Agr. R. 4, 48, 1916.

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- Felt, N. Y. R. 30, 21, 1915.  
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- Forbes, Ill. B. 186, 229, 1916.  
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**Phyllophaga prunina**

- Forbes, Ill. B. 186, 234, 1916.  
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- Davis, J. Ec. Ent. 9, 264, 1916.

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**Phytonomus posticus, control, Utah**

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**Phytonomus posticus, quarantine**

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**Phytophaga destructor and resistant wheat**

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**Phytophaga destructor and winter wheat**

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 Du Porte, Ont. Ent. Soc. R. 46, 49, 1916.  
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Felt, N. Y. St. Mus. B. 194, 74, 1917.  
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Popenoe, U. S. D. A. B. 743, 35, 1919.

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Watson, Fla. R. 1915, 176.

Wilson, Fla. St. Pl. Bd. Quar. B. 2, 29, 1917.

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Cotton, Porto Rico Dept. Agr. J. 2, 306, 1918.

Cotton, Rev. Agr. Puerto Rico 1, 257, 1918.

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Morrill, Ariz. Comm. Agr. &amp; Hort. R. 8, 44, 1916.

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Davis, J. N. Y. Ent. Soc. 27, 108, 1919.

Morse, Psyche 26, 23, 1919.

Zappe, Conn. B. 203; 302, 311, 1917.

***Pycnosoma marginale***

Riley &amp; Johannsen, Med. Ent. 306, 1915.

***Pycnosoma putorium***

Fantham, Anim. Par. 614, 1916.

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Bishopp, U. S. D. A. B. 248, 12, 1915.

Chandler, Anim. Par. 417, 1918.

Felt, N. Y. St. Mus. B. 194, 35, 1917.

Otten, J. Am. Med. Assoc. 71, 415, 1918.

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Hood, Proc. Biol. Soc. Wash. 28, 50, 1915.

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McCormack, Panama Health R. 1918, 32, 1919.

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Rohwer, Proc. U. S. Nat. Mus. 53, 159, 1917.

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Williams, J. N. Y. Ent. Soc. 25, 20, 1917.

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***Pyrausta illibalis***

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Agr. B. 123, 15, 1919.

Adline, Prairie Farm. 91, 1504, 1919.

Allen, C. Gentl. 84, 4, 9, 1919.

Allen, Mass. Dept. Agr. Order of Quar.  
3, 1919.

Allen, Mass. Dept. Agr. R. 1, 82, 1919.

Atwood, N. Y. Dept. Farms & Markets,  
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Bailey, Vt. Dept. Agr. C. 3, 1, 1919.

Bilsing, Farm & Ranch, 38, 7, 2, 1919.

Bingham, Mich. Bus. Farm. 6, 922, 1919.

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21, 17, 1919.

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Cotton, Ohio Dept. Agr. Off. B. 11, 4,  
25, 1919.

Cotton, Ohio Dept. Agr. Off. B. 11, 7,  
10, 1919.

Cotton, Ohio Dept. Agr. Off. B. 12, 7,  
10, 1919.

Crawford, Neb. Farm. 61, 1522, 1919.

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Dean, Okla. Farm. 29, 9, 30, 1919.

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Dudley, Me. Dept. Agr. B. 18, 4, 101,  
1919.

Eaton, Rur. N. Y. 78, 360, 1919.

Farrington, C. Gentl. 84, 44, 32, 1919.

Felt, Cornell Countrym. 16, 177, 1919.

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Flint, Prairie Farm. 91, 1251, 1919.

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Fracker, Wis. Dept. Agr. Quar. 4, Dec.  
26, 1919.

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- Mosher, J. Ec. Ent. 12, 387, 1919.
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- Britton, Conn. B. 211, 323, 1919.
- Dudley, Me. Dept. Agr. B. 18, 4, 105, 1919.
- Marlatt, N. Y. Dept. Farms & Markets Agr. B. 123, 60, 1919.
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- Pyrgota undata**
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Back, U. S. F. B. 1029, 21, 1919.  
Busck, J. Agr. Res. 9, 362, 1917.  
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Harned, J. Ec. Ent. 9, 295, 1916.  
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221, 287, 346, 401, 447, 548, 529, 539,  
575, 1915.

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422, 451, 1916.

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261, 321, 347, 361, 376, 413, 483, 1917.

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479, 508, 591, 1918.

Maskew, Cal. Hort. B. 8; 84, 126, 429,  
610, 448, 1919.

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**Ravinia latisetosa**

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**Red-humped caterpillar, see Schizura concinna****Red-leaf-beetle, see Galerucella cavicollis**



- Red-legged grasshopper**, *see* *Melanoplus femur-rubrum*
- Red scale**, *see* *Chrysomphalus aurantii*
- Red spiders**, *see* *Bryobia pratensis* and *Tetranychus* spp.
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 Flint, J. Ec. Ent. 11, 416, 1918.  
 Gibson, U. S. D. A. B. 254, 15, 1915.  
 Osborn, J. Agr. Res. 15, 194, 1918.  
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 Cory, Peninsula Hort. Soc. Tr. 30, 64, 1917.
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 McGregor & McDonough, U. S. D. A. B. 416, 63, 1917.
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- Reticulitermes sp.**  
 Morrill, Ariz. Com. Agr. & Hort. R. 9, 56, 1917.  
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- Mattoon, U. S. D. A. B. 244, 36, 1915.
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**Spray calendar, apple**

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 Cate & Moren, Jackson Co. Oreg. Path. & Ent. C. 1, 1919.  
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- Baldwin, Ind. Ent. R. 8, 172, 1916.

**Spray calendar, cherry**

- Baldwin, Ind. Ent. R. 8, 135, 1916.  
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**Spray calendar, cucumber**

- Lassetter, Ark. Ext. C. 61, 1919.

**Spray calendar, garden crops**

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**Spray calendar, gooseberries**

- Baldwin, Ind. Ent. R. 8, 157, 1916.

**Spray calendar, grape**

- Baldwin, Ind. Ent. R. 8, 154, 1916.  
 Bentley, Tenn. B. 121, 19, 1918.  
 Lassetter, Ark. Ext. C. 60, 1919.

**Spray calendar, melons**

- Baldwin, Ind. Ent. R. 8, 171, 1916.

**Spray calendar, orchard**

- Carmody, Ky. Ext. C. 24, 1914.  
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 Gossard & Green, Ohio Mo. B. 1, 103, 1916.  
 Sanborn & Mooring, Okla. Farm.-Stock 32, 1218, 1919.  
**Spray calendar, peach**  
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- Fisher & Newcomer, U. S. F. B. 1056, 33, 1919.

**Spray calendar, plum**

- Lassetter, Ark. Ext. C. 59, 1919.  
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**Spray calendar, potatoes**

- Baldwin, Ind. Ent. R. 8, 170, 1916.

**Spray calendar, raspberries**

- Baldwin, Ind. Ent. R. 8, 164, 1916.

**Spray calendar, strawberries**

- Baldwin, Ind. Ent. R. 8, 170, 1916.

**Spray calendar, vegetables**

- Sanborn & Mooring, Okla. Ext. C. 110, 1919.  
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**Spray, dormant\***

- Becker, Ark. B. 141, 1918.  
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 Blair, Nova Scotia Fr. Gr. Assoc. R. 51, 172, 1915.  
 Crosby & Mix, N. Y. C. B. 356, 129, 1915.  
 Drinkard, Va. Hort. Soc. B. 5, 1, 5, 1917.  
 Merrill, Kans. C. 66, 6, 1918.  
 Parrott, N. Y. Dept. Agr. B. 97, 33, 1917.  
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 Scott, Adams Co. Fr. Gr. Assoc. Proc. 10, 49, 1914.

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- Bentley, Tenn. B. 121, 40, 1918.  
 Chase, Ga. Bd. Ent. B. 54, 9, 1919.  
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 Cory, Del. Dept. Agr. B. 6, 3, 62, 1916.  
 Cory, Md. Ext. B. 11, 1918.  
 Chadwick, J. Jam. Agr. Soc. 21, 185, 1917.  
 Cruickshank, Wis. Hort. 9, 133, 1919.  
 Dacy, W. Va. Ext. C. 206, 11, 1918.  
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 Eustace & Pettit, Mich. Sp. B. 73, 14, 1915.  
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 Gossard, Ohio Hort. Soc. R. 52, 9, 1919.  
 Gray, Cal. B. 269, 344, 1916.  
 Gunderson, Ill. Hort. Soc. Tr. 49, 440, 1915.  
 Howard, Mo. & Kans. Farm. 35, 8, 10, 1919.  
 Hunter, Kans. Hort. Soc. Tr. 34, 184, 1918.  
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 Macoun, Can. Exp. Farm. B. 86, 68, 1916.  
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 Ruggles & Stakman, Minn. Hort. 45, 222, 1917.  
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Beach, Iowa Ext. B. 35, 18, 1915.

Beach, Iowa Hort. Soc. Tr. 50, 294, 1916.

Beach, Wis. Hort. Soc. R. 49, 106, 1919.

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Berger, Cal. Hort. B. 6, 302, 1917.

Blackman & Ellis, N. Y. St. Col. For.

Syracuse B. 16, 26, 113, 1916.

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Brock, Ill. Hort. Soc. Tr. 63, 132, 1918.

Brown, Ill. C. 226, 3, 1918.

Caesar, Ont. Dept. Agr. B. 250, 3, 1917.

Cameron, N. J. R. 1914, 361.

Childs, J. Ec. Ent. 8, 457, 1915.

Childs, Oreg. B. 141, 19, 1917.

Chittenden, U. S. F. B. 1038, 16, 1919.

Chittenden & Orton U. S. F. B. 868, 1917.

Clausen, Cal. B. 258, 43, 1915.

Conant, Me. St. Pomol. Soc. R. 1916, 61, 71, 1917.

Cooper, Neb. Hort. Soc. R. 47, 187, 1916.

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Cory, Peninsula Hort. Soc. Tr. 31, 76, 1918.

Cory, Del. St. Agr. B. 4, 3, 67, 1915.

Coy, Cal. Hort. B. 5, 453, 1917.

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Cruickshank, Ind. Hort. Soc. B. 1, 4, 11, 1919.

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Forbes, Ill. Ent. R. 28, 68, 1915.

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 Greene, Iowa C. 20, 24, 1915.  
 Greene, Iowa Hort. Soc. Tr. 50, 258, 1916.  
 Greene, Kans. Hort. Soc. Tr. 34, 45, 1918.  
 Greene, Ind. Hort. Soc. B. 1, 3, 8, 1919.  
 Gunderson, Ill. Hort. Soc. Tr. 63, 83, 1918.  
 Hadley, Adams Co. Fr. Gr. Assoc. Proc. 12, 43, 1916.  
 Halligan & Pettit, Mich. Sp. B. 86, 1918.  
 Hamlett, Tenn. Hort. Soc. Proc. 12, 53, 1917.  
 Harrington, Iowa Hort. Soc. Tr. 51, 500, 1917.  
 Haseman, Mo. P. B. 77, 1915.  
 Headlee, N. J. Hort. Soc. Proc. 44, 126, 1919.  
 Hedrick, N. Y. Geneva C. 52, 10, 1917.  
 Herrick, Iowa Hort. Soc. Tr. 51, 276, 1917.  
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 Herrick & Allison, Iowa Emerg. Leaf. 12, 1918.  
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 Herron, Miss. Ext. C. 19, 1917.  
 Hodgkiss, Adams Co. Fr. Gr. Assoc. Proc. 11; 83, 90, 1915.  
 Hoffman et al., S. C. Ext. C. 18, 41, 1919.  
 Houser, Ohio Mo. B. 4, 435, 1919.  
 Houser Guyton & Lowry, Ohio B. 317, 81, 1917.  
 Howard, Neb. Hort. Soc. R. 50, 40, 1919.  
 Howitt & Caesar, Ont. Dept. Agr. B. 257, 2, 1917.  
 Hunter, J. Ec. Ent. 8, 236, 1915.  
 Hunter, Kans. Hort. Soc. Tr. 33; 39, 180, 1916.  
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 Isely, U. S. D. A. B. 550, 14, 1917.  
 Johnson, Mo. Ext. C. 31, 15, 1917.  
 Johnson, Peninsula Hort. Soc. Tr. 30, 86, 1917.  
 Jones, Cal. Hort. B. 4, 20, 1915.  
 Keitt, Wis. B. 286, 7, 1918.  
 Kellogg, Wis. Agr. 40, 24, 11, 1916.  
 Kendrick, W. Va. Ext. C. 25, 1915.  
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 Moore, Wis. B. 269, 36, 1916.  
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- Sherbakoff, Fla. B. 139, 194, 1917.
- Sherman, N. C. Agr. Ext. C. 66, 1918.
- Somes, Mo. Fruit C. 8, 1914.
- Stahl, Wash. Mo. B. 3, 12, 4, 1915.
- Starcher, Va. Hort. Soc. R. 21, 173, 1916.
- Starcher, Va. Dept. Agr. B. 138, 137, 1919.
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- Vinal & Caffrey, Mass. B. 189, 62, 1919.
- Washburn, Minn. R. 22, 33, 1915.
- Washburn, Minn. R. 23, 42, 1916.
- Washburn, Minn. R. 24, 47, 1917.
- Waterbury, Wash. Dept. Agr. Bien. R. 3, 80, 1918.
- Weed, Spraying for profit, 1917.
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- Weldon, Cal. Hort. B. 6, 398, 1917.
- Weldon, Cal. Hort. B. 7, 336, 1918.
- Wheeler, Vt. St. Hort. Soc. R. 12, 92, 1915.
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- Wiley, Iowa Hort. Soc. Tr. 51, 50, 1917.
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- Woodbury, Richards & Reed, Ind. B. 194, 26, 1916.
- Worthley, U. S. D. A. B. 480, 1917.
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- Yothers, U. S. D. A. B. 645, 1918.
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- Zuber, Tex. Dept. Agr. B. 52, 153, 1916.

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 Lowther, Gem. St. Rur. 24, 46, 13, 1919.  
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 Melander, Better Fr. 13, 9, 36, 1919.  
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 Gray, Cal. B. 269, 367, 1916.  
 Herrick, Ins. Econ. Import. 29, 1915.  
 Hoffman et al., S. C. Ext. C. 18, 36, 1919.  
 Jenks, New Eng. Homest. 78, 6, 8, 1919.  
 Leiby & Sherman, N. C. Ext. C. 48, 5, 1917.  
 Lewis, Chase & Turner, Ga. Bd. Ent. B. 53, 6, 1919.

- Macoun, Can. Exp. Farms B. 86, 71, 1916.  
 Moore, Wis. B. 269, 43, 1916.  
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 Peairs & Merrill, Kans. B. 214, 23, 1916.  
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 Quaintance, U. S. F. B. 650, 27, 1915.  
 Quaintance & Siegler, U. S. F. B. 908, 61, 1918.  
 Ralston & Marshall, Va. Poly. Ext. B. 14, 43, 1917.  
 Rees, Tr. Mass. Hort. Soc. 1914, 89.  
 Regan, Mass. B. 177, 143, 1918.  
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 Sanders, Wis. Dept. Agr. B. 3, 19, 1916.  
 Sears, Mass. Ext. C. 34, 1917.  
 Sherman, N. C. Dept. Agr. C. 209, 41, 1915.  
 Sherman, N. C. Ext. C. 66, 17, 1918.  
 Stewart, N. Y. C. B. 358, 176, 1915.  
 Talbert, Mo. Ext. C. 15, 6, 1917.  
 Tenn. Hort. Soc. Proc. 10, 11, 1915.  
 Washburn, Inj. Ins. 52, 1918.  
 Werner, N. D. C. 17, 42, 1918.  
 White, N. Y. Dept. Agr. B. 102, 102, 1917.  
 Wilkinson, C. Gentl. 81, 158, 1919.  
 Wilson, Wis. Col. Agr. Ext. C. 78, 7, 1917.  
 Worthley, U. S. D. A. B. 480, 13, 1917.  
 Yothers, Fla. Hort. Soc. Proc. 31, 3, 77, 1918.  
 Yothers, U. S. F. B. 933, 8, 1918.
- Spraying apparatus, spray gun**
- Lewis, Md. Farm 1, 26, 9, 1919.  
 Lewis, Ohio Mo. B. 4, 59, 1919.  
 Lowther, Gem St. Rur. 23, 52, 13, 1918.
- Spraying, apples\***
- Barss & Lovett, Oreg. Ext. B. 193, 1917.  
 Brock, Proc. Amer. Soc. Hort. Sci. 15, 80, 1918.  
 Bunting, J. Agr. Quebec 19; 227, 233, 1916.  
 Christie, Ind. Ext. B. 80, 1919.  
 Eustace & Pettit, Mich. Sp. B. 93, 7, 1919.

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Forbush, Mass. Bd. Agr. B. 2, ed. 5, 166, 1916.

Poster, Wash. Hort. Assoc. R. 13, 108, 1917.

Gunderson, Ill. B. 222, 1919.

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Headlee, Mass. Dept. Agr. C. 9, 1919.

Headlee, N. J. Hort. Soc. Proc. 44, 126, 1919.

Hoppert, Neb. Hort. Soc. R. 49, 82, 1918.

Marshall, Va. Ext. Div. News 1, 7, 4, 1919.

Morse & Shapovalov Me. B. 240, 177, 1914.

Morse, Me. St. Pom. Soc. R. f. 1915, 44.

Morse, Me. B. 249, 81, 1916.

Morse, Me. B. 271, 1918.

O'Kane, N. H. Dept. Agr. Bien. R. 1918, 242, 1919.

Lassetter, Ark. Ext. C. 71, 1919.

Lassetter, Ark. Ext. C. 72, 1919.

Lassetter, Ark. Ext. C. 73, 1919.

Lassetter, Ark. Ext. C. 74, 1919.

Reddick & Crosby, N. Y. C. B. 369, 1916.

Richards, Ind. Hort. Soc. Tr. 1915, 428, 1916.

Sanders, Nova Scotia Fr. Gr. Assoc. R. 51, 184, 1915.

Sanders, Proc. Ent. Soc. Nova Scotia 2, 17, 1917.

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Sanders & Kelsall, Proc. Ent. Soc. Nova Scotia 3, 77, 1918.

Schoene, Va. Hort. Soc. B. 5, 2, 11, 1917.

Sherman, N. C. Dept. Agr. B. 209, 29, 1915.

Watson, Tenn. Ext. Pub. 31, 1917.

Wiggan, Mo. St. Bd. Agr. R. 48, 393, 1916.

**Spraying, berries**

Beach, Iowa Ext. B. 35, 27, 1915.

**Spraying, blackberries**

Eustace & Pettit, Mich. Sp. B. 93, 17, 1919.

**Spraying, bush fruits**

Hesler, New Eng. Homest. 78, 9, 17, 1919.

Kiethly, Wis. Hort. 9, 93, 1919.

**Spraying, cabbage**

Beach, Iowa Ext. B. 35, 29, 1915.

**Spraying cattle, for lice**

Imes, U. S. F. B. 909, 9, 1918.

**Spraying, cherries**

Barss & Lovett, Oreg. Ext. B. 196, 1917.

Beach, Iowa Ext. B. 35, 23, 1915.

Eustace & Pettit, Mich. Sp. B. 93, 14, 1919.

**Spraying chemicals**

Sherman, N. C. Dept. Agr. B. 209, 39, 1915.

Sherman, N. C. Ext. C. 66, 16, 1918.

Fulton, Fla. St. Hort. Soc. Proc. 30, 60, 1917.

Grossenbacher, Fla. Grower 17, 20, 10, 1918.

McCoy, Orchard & Farm 30, 3, 12, 1918.

Moreno, Fla. Gr. 11, 23, 14, 1915.

Tenny, Fla. Gr. 13, 18, 10, 1916.

Watson, Fla. Gr. 19, 12, 25, 1919.

Yothers, Fla. Gr. 15, 10, 5, 1917.

Yothers, Fla. Gr. 15, 11, 7, 1917.

Yothers, Fla. Gr. 15, 12, 9, 1917.

Yothers, U. S. F. B. 933, 1918.

**Spraying, combination, for insects and diseases**

Jones, Wash. Hort. Assoc. R. 12, 123, 1916.

**Spraying, community**

Geiger, Fla. Hort. Soc. Proc. 32, 122, 1919.

Waldron, Fla. Gr. 17, 19, 5, 1918.

Waldron, Fla. Hort. Soc. Proc. 31, 74, 1918.

**Spraying, compulsory**

Geiger, Fla. Gr. 20, 1, 8, 1919.

Kirkpatrick, Minn. Hort. 45, 77, 1917.

**Spraying, *Conotrachelus juglandis***

Morris, Am. Nut Jour. 9, 37, 1918.

**Spraying, *Conotrachelus nenuphar***

Stuckey, Southern Cult. 73, 7, 32, 1915.

Stuckey, Southern Cult. 76, 7, 28, 1918.

**Spraying, cooperative**

Cookingham, C. Gentl. 83, 16, 34, 1918.

Drake, Penn. Farm. 43, 579, 1918.

Geiger, Fla. Gr. 20, 1, 8, 1919.

Howard, Mo. B. 124, 189, 1915.

- Jay, Green's Fr. Gr. 37, 2, 1, 1917.  
 Lawton, Ill. Hort. Soc. Tr. 63, 240, 1918.  
 McPheeters, Minn. Hort. 47, 218, 1919.  
 Rankin, Penn. Farm. 43, 254, 1918.  
 Strickland & Peet, N. Y. Dept. Agr. B. 106, 35, 1917.  
 Waldron, Fla. Hort. Soc. Quar. 31, 3, 74, 1918.  
 Weld, Garden Mag. 22, 191, 1915,  
 Whitten, Natl. Farm. & Stock. Gr. 35, 4, 16, 1916.
- Spraying, cost**  
 Baker, Ont. Ent. Soc. R. 47, 55, 1917.  
 Cameron & Treherne, Agr. Gaz. Can. 4, 13, 1917.  
 Cohill, C. Gentl. 81, 1160, 1916.  
 Conner, Utah B. 165, 1918.  
 Crosby, J. Ec. Ent. 9, 375, 1916.  
 Douglass, Fruit Belt 14, 1, 3, 1918.  
 Douglass, Rur. N. Y. 76; 324, 376, 1918.  
 Engberg, Succ. Farm. 18, 5, 46, 1919.  
 Foster, Gem St. Rural 23, 29, 4, 1918.  
 Foster, Oreg. Farm. 28, 19, 7, 1918.  
 Gray, Cal. Hort. B. 8, 109, 1919.  
 Horton, Ark. Homest. 17, 21, 6, 1917.  
 Leiby, N. C. Dept. Agr. B. 40, 3, 37, 1919.  
 Lochhead, Class Book Econ. Ent. 381, 1919.  
 Safro, J. Ec. Ent. 10, 321, 1917.  
 Stewart, Penn. Farm. 43; 480, 508, 1918.  
 Veeder, Ga. St. Col. Agr. B. 106, 41, 1916.  
 Weldon, Cal. Hort. B. 8, 238, 1919.  
 Wright, Natl. Stockman 40, 1436, 1917.
- Spraying, cranberry**  
 Chambers, Amer. Cran. Gr. Assoc. Proc. Meet. 46, 8, 1916.
- Spraying, cucumber**  
 Brehm, C. Gentl. 80, 655, 1915.  
 Eustace & Pettit, Mich. Sp. B. 93, 19, 1919.
- Spraying, currant**  
 Beach, Iowa Ext. B. 35, 27, 1915.  
 Eustace & Pettit, Mich. Sp. B. 93, 16, 1919.
- Spraying, damage from**  
 Stewart, Penn. Farm. 39, 30, 1916.
- Spraying, danger from**  
 Gossard, Ohio Farm, 554, 1917.
- Stewart, Natl. Stock & Farm. 39, 370, 1915.  
 Stewart, Mo. & Kans. Farm. 32, 5, 7, 1916.
- Spraying, dewberries**  
 Eustace & Pettit, Mich. Sp. B. 93, 17, 1919.
- Spraying, efficiency and economy**  
 Parrott, Proc. N. Y. Fr. Gr. Assoc. 17, 40, 1918.  
 Parrott, West. N. Y. Hort. Soc. Proc. 63, 18, 1918.
- Spraying, experiments**  
 Brittain, Agr. Gaz. Can. 4, 193, 1917.  
 Brock, Ill. Hort. Soc. Tr. n. s. 50, 252, 1916.  
 Childs, Oreg. B. 128, 28, 1918.  
 Cooper, Neb. Research B. 10, 1917.  
 Flint et al., Prairie Farm. 91, 2247, 1919.  
 Gunderson, Ill. Hort. Soc. Tr. n. s. 51, 406, 1917.  
 Kydd, Agr. Gaz. Can. 4, 207, 1919.  
 Lavoie, Agr. Gaz. Can. 4, 196, 1917.  
 Leopold, Agr. Gaz. Can. 4, 199, 1917.  
 Levasseur, Agr. Gaz. Can. 4, 199, 1917.  
 Parrott, N. Y. St. Fr. Gr. Assoc. Proc. 14, 48, 1915.  
 Pickett, Ill. Hort. Soc. Tr. n. s. 50, 227, 1916.  
 Sanders, Agr. Gaz. Can. 4, 115, 1917.  
 Vinal, Mass. B. 179, 163, 1918.  
 Watkins, Ill. Hort. Soc. Tr. n. s. 49, 198, 1915.  
 Winslow, Agr. Gaz. Can. 4, 209, 1917.
- Spraying, field crop insects**  
 Stack, Farm Engineering 3, 1, 11, 1916.
- Spraying, Gammon system**  
 Weldon, Cal. Hort. B. 5, 275, 1916.  
 Weldon, Cal. Hort. B. 7, 339, 1918.
- Spraying, garden insects**  
 Frank, Wash. Mo. B. 5, 50, 1917.
- Spraying, gooseberries**  
 Eustace & Pettit, Mich. Sp. B. 93, 16, 1919.
- Spraying, grape**  
 Beach, Iowa Ext. B. 35, 26, 1915.  
 Carmody, Ky. Ext. C. 30, 8, 1915.  
 Eustace & Pettit, Mich. Sp. B. 93, 15, 1919.  
 Hartzell, N. Y. St. Fr. Gr. Assoc. Proc. 14, 127, 1915.

**Spraying, grapes** (*Cont'd.*)

Hartzell, N. Y. Dept. Agr. B. 79, 1297, 1916.

Rose, Mo. Fruit C. 11, 1918.

Somes, Mo. Fruit C. 9, 1915.

Stuckey, So. Cult. 75, 11, 24, 1917.

Stuckey, So. Cult. 76, 10, 23, 1918.

**Spraying, grasshoppers**

McCall, Gem St. Rural 22, 2, 1, 1916.

**Spraying, *Heliothis obsoleta***

M'Colloch, Or. Judd Farm. 61, 2, 6, 1916.

**Spraying, house plants**

Gall, Can. Hort. 38, 34, 1915.

**Spraying, irrigation system**

Skinner, Fruitm. & Gardn. 18, 7, 8, 1915.

**Spraying, melons**

Beach, Iowa Ext. B. 28, 1915.

**Spraying, Missouri**

Howard, Mo. B. 124, 1915.

**Spraying, new practice**

Talbert, New Eng. Farms 2, 41, 10, 1919.

**Spraying, Niagara Co.**

Strickland & Peet, N. Y. Dept. Farms & Markets B. 106, 1918.

**Spraying, nursery**

O'Byrne, Fla. Gr. 20, 20, 8, 1919.

**Spraying, oranges**

Winberg, Ala. Farm Facts 4, 92, 9, 1919.

**Spraying, orchard\***

Alderman, Nat. Stock. & Farm. 39, 1275, 1916.

Alderman, W. Va. Ext. C. 172, 1918.

Barss & Lovett, Oreg. B. 228, 1916.

Barss & Lovett, Oreg. St. Bd. Hort.

Bien. R. 15, 63, 1919.

Beach, Iowa Ext. B. 35, 1915.

Blodgett, Iowa Hort. Soc. Tr. 52, 50, 1918.

Bunting, J. Agr. Quebec 18, 207, 1915.

Caesar, Ont. Dept. Agr. B. 250, 3, 1917.

Conradi & Barre, S. C. Ext. C. 17, 1919.

Cooper, Neb. Ext. B. 24, 1914.

Curtiss, Iowa R. 1918, 32.

Dean, Kans. Hort. Soc. Trans. 34, 202, 1918.

Dunlap, Minn. Hort. 44, 119, 1916.

Frank, Wash. Mo. B. 5, 171, 1917.

Garman, Ky. Agr. Labor & Stat. Bien. R. 22, 425, 1918.

Herrick, Iowa Dept. Agr. R. 19, 493, 1919.

Herron, Miss. Ext. C. 19, 1917.

Hoffman et al., S. C. Ext. C. 18, 19, 1919.

Lewis, Kans. B. 203, 1915.

McDowell, Pa. St. Col. Ext. C. 55, 1917.

Perrine, Ill. Hort. Soc. Tr. n. s. 51, 265, 1917.

Rees, Wash. Mo. B. 2, 12, 10, 1915.

Sanders, Me. St. Pomol. Soc. R. 1915, 30, 1916.

Sherman, N. C. Dept. Agr. B. 209, 27, 1915.

Sherman, N. C. R. 38, 20, 1915.

Sherman, N. C. Ext. C. 66, 1918.

Simmons, Minn. Hort. 45, 109, 1917.

Wilson, Wis. Agr. 41, 8, 1, 1917.

**Spraying, Ozarks**

Radder, C. Gentl. 84, 3, 13, 1919.

**Spraying, peach\***

Barss & Lovett, Oreg. Ext. B. 195, 1917.

Beach, Iowa Ext. B. 35, 23, 1915.

Chase, Ga. Ent. C. 21, 1917.

Drew, Va. Dept. Agr. B. 109, 101, 1916.

Eustace & Pettit, Mich. Sp. B. 93, 9, 1919.

Farley, Penn. Hort. Assoc. Proc. 57, 22, 1916.

Gillam, N. J. Ext. B. 1, 13, 51, 1917.

Lanham & Hayes, Tex. Ext. B. 29, 26, 1916.

Richards, Ind. Hort. Soc. Tr. 1915, 432, 1916.

Roberts, Peninsula Hort. Soc. Tr. 29, 30, 1916.

Sherman, N. C. Dept. Agr. B. 209, 32, 1915.

Sherman, N. C. R. 38, 21, 1915.

Watson, Tenn. Ext. Pub. 30, 1917.

**Spraying, pear**

Barss, Oreg. St. Bd. Hort. Bien. R. 15, 66, 1919.

Barss & Lovett, Oreg. Ext. B. 193, 1917.

Clement & Robb, Ont. Dept. Agr. B. 249, 18, 1917.

Eustace & Pettit, Mich. Sp. B. 93, 12, 1919.

Strickland, Proc. N. Y. Fr. Gr. Assoc. 17, 21, 1918.

**Spraying, pipe system**

Schroeder, Maritime Farm. 21, 118, 1915.

Starcher, Va. Hort. Soc. R. 20, 208, 1916.



**Spraying, plum**

- Barss & Lovett, Oreg. Ext. B. 194, 1917.  
 Beach, Iowa Ext. B. 35, 25, 1915.  
 Eustace & Pettit, Mich. Sp. B. 93, 14, 1919.  
 Moore, Wis. Agr. 41, 9, 14, 1917.  
 Stuckey, Southern Cult. 76, 4, 36, 1918.

**Spraying, poisons used**

- Eustace & Pettit, Mich. Sp. B. 93, 26, 1919.

**Spraying, potato\***

- Arthur, Penn. Farm. 37, 442, 1915.  
 Beach, Iowa Ext. B. 35, 28, 1915.  
 Carlisle, N. H. Ext. C. 13, 6, 1914.  
 Erwin, Proc. Amer. Soc. Hort. Sci. 14, 45, 1917.  
 Fox, N. Y. C. Mem. 22, 607, 1919.  
 Graham, Minn. Ent. R. 17, 21, 1918.  
 Heald, Wash. St. Hort. Assoc. Proc. 14, 120, 1918.  
 Hume, S. D. B. 176, 752, 1917.  
 Kendrick, W. Va. C. 233, 1919.  
 Leiby, N. C. Dept. Agr. B. 254, 1919.  
 Leiby & Sherman, N. C. Ext. C. 48, 1917.  
 Macoun, Can. Dept. Agr. (Hort. Div.) B. 90, 46, 1918.  
 Melhus, Iowa Ext. B. 56, 11, 1917.  
 Morse, Me. Dept. Agr. B. 17, 1, 33, 1918.  
 Ramsey, Me. Ext. B. 119, 1918.  
 Rankin, Quebec Soc. Protec. Pl. R. 11, 49, 1919.  
 Ruggles & Graham, Minn. Ext. Sp. B. 29, 22, 1918.  
 Sherman, N. C. R. 38, 22, 1915.  
 Stewart, N. Y. Dept. Agr. B. 57, 1125, 1915.  
 Stewart, N. Y. Dept. Agr. B. 102, 79, 1917.  
 Stuckey & Higgins, Ga. Exp. Sta. B. 123, 1916.  
 Swenk & Wilcox, Neb. Ext. Emerg. B. 10, 1917.  
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betae****Sugar-beet webworm, see Loxostege  
sticticalis****Sugar-cane frog hoppers, see Tomaspis  
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Macnamara, Can. Ent. 51, 76, 1919.

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Yothers, Wash. B. 124, 28, 1916.

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Moznette, Fla. Bug. 3, 45, 1919.

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Britton, Conn. R. 14, 188, 1915.

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Britton, Conn. B. 216, 50, 1919.

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 Morrill, Ariz. Comm. Agr. & Hort. R. 9, 53, 1917.
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- Trichodectes parumpilosus**  
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McGregor, Ann. Ent. Soc. Amer. 10, 172, 1917.

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Girault, Ent. News 26, 131, 1915.

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Holloway & Loftin, U. S. D. A. B. 746, 41, 1919.

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Chapman, J. Agr. Res. 3, 292, 1915.

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Baird, Agr. Gaz. Can. 5, 766, 1918.

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Fantham, Anim. Par. 603, 1916.

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Reinhard, Ent. News 30, 285, 1919.

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Weiss & Dickerson, Psyche 25, 59, 1918.  
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Barber, Proc. Ent. Soc. Wash. 21, 59, 1919.  
Weiss, J. Ec. Ent. 8, 552, 1915.
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Headlee, N. J. R. 1914, 354.  
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- Triphleps insidiosus**  
Ackerman, U. S. D. A. B. 805, 20, 1919.  
Chittenden, U. S. F. B. 1007, 7, 1919.
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Horton, U. S. D. A. B. 616, 26, 1918.  
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Foster and Jones, U. S. D. A. B. 173, 52, 1915.
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Childs, Oreg. B. 148, 27, 1918.
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Burrill, J. Ec. Ent. 11, 422, 1916.  
Compere, Cal. Hort. B. 4, 574, 1915.  
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Morrill, Ariz. Comm. Agr. & Hort. R. 7, 46, 1915.  
Watson, Fla. R. 1914, 56.  
Watson, Fla. B. 148, 254, 1918.
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Morrill, Ariz. Comm. Agr. & Hort. R. 7, 45, 1915.
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Morrill, Ariz. Comm. Agr. & Hort. R. 7, 46, 1915.
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Paddock, Texas B. 227, 57, 1918.
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Rohwer, Proc. U. S. Nat. Mus. 49, 233, 1916.
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 Runner, U. S. D. A. B. 737, 30, 1919.  
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**Trombidium inapinatum**

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